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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/702,051	10/27/2000	Cha Zhang	MS1-581US	8549
22801	7590	01/15/2004	EXAMINER	
LEE & HAYES PLLC 421 W RIVERSIDE AVENUE SUITE 500 SPOKANE, WA 99201			COUSO, YON JUNG	
			ART UNIT	PAPER NUMBER
			2625	
DATE MAILED: 01/15/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/702,051

Applicant(s)

ZHANG ET AL.

Examiner

Yon Couso

Art Unit

2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 10-16 and 21-36 is/are rejected.
- 7) ☒ Claim(s) 6-9 and 17-20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 October 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_. 6) ☐ Other: \_\_\_\_\_

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1. Claims 23-33 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 23-33 recite an apparatus claim comprising "logic" which is only means in the claims cover every conceivable means for achieving the stated purpose. Claims 23-33 are directed to a single means claims which are rejected under 35 USC 112, first paragraph as being subjected to an undue breadth (see MPEP 2164.08), In re Hyatt, 708 F.2d 712, 714-715, 218 USPQ 195, 197 (Fed. Cir. 1983).

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 10, 12-16, 21, 23-27, 32, 34, and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Shum et al "Stereo Reconstruction from Multiperspective Panoramas".

As per claims 1, 12, and 23, Shum teaches a method comprising: selectively aligning at least two image based rendering (IBR) image data along a specific direction (page 2, column 1, lines 9-13 and figure 1a); and selectively rebinning the aligned IBR image data to form a multi-perspective panorama (figure 1b).

As per claims 2, 13, and 24, Shum teaches the IBR image data includes concentric mosaic (COM) image data (page 2, column 2, lines 21-23).

As per claims 3, 14, and 25, Shum teaches the specific direction is substantially a horizontal direction with respect to a captured scene (page 2, column 1, lines 13-16).

As per claims 4, 15, and 26, Shum teaches wherein selectively aligning the at least two image based rendering (IBR) image data further includes pair-wise aligning of concentric mosaic (COM) image data (page 2, column 2, lines 7-9 and page 4, column 1, lines 41-53).

As per claims 5, 16, and 27, Shum teaches wherein selectively rebinning the aligned IBR image data to form the multi-perspective panorama further includes: subdividing each of the IBR image data into a plurality of portions (figure 1a and page 2, column 2, lines 21-23); and combining a specific portion selected from each IBR image data to form a portion of the multi-perspective panorama (figure 1b).

As per claims 10, 21, and 32, Shum teaches generating a set of multi-perspective panorama to provide a dense representation of an IBR captured environment (figures 6a and 6b).

As per claim 34, Shum teaches a method comprising: providing a plurality of concentric mosaic image data (page 1, column 2, lines 19-26); de-correlating the plurality of concentric mosaic image data along a cross-shot direction based on at least one calculated displacement vector to form a skewed data set (page 1, column 2, lines 35-38 and page 3, column 2, lines 4-6); and rebinning portions of the skewed data set to form a multi-perspective panorama (page 2, column 1, lines 9-13).

As per claim 35, Shum teaches a method comprising: providing concentric mosaic image data (page 1, column 2, lines 19-26); dividing the concentric mosaic image data into stripes according to at least one displacement vector associated with a horizontal filtering (page 4, column 1, lines 7-11); and rebinning portions of striped concentric mosaic data to form a panorama (page 2, column 1, lines 9-13).

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 11, 22, 33, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shum et al "Stereo Reconstruction from Multiperspective Panoramas" in view of Pearlman et al.

The arguments advanced in paragraph 2 above as to the applicability of the reference are incorporated herein.

As per claim 36, Shum teaches a method comprising: providing a plurality of concentric mosaic image data (page 1, column 2, lines 19-26); dividing each of the plurality of concentric mosaic image data into slits (figures 1 and 2); rebinning all of the slits into a two-dimensional array (page 2, column 1, lines 9-13). Shum does not teach details on compressing the two-dimensional array. However, the use of compression in image data processing is practically essential for data storage and data transmission. Pearlman teaches N-dimensional data compression column 4, lines 19-51). It would have been obvious to one of ordinary skill in the art, given the references at the time the invention was made, to incorporate any well-known data compression technique into Shum's disclosure. Shum is directed to stereo reconstruction from multiperspective panorama. Once the image is obtained using stereo reconstruction from multiperspective panorama, it would have been obvious to any one of ordinary skill in the art to compress the image for data storage and/or data transmission. Mere incorporation of compression into the Shum's teaching is not patentably significant, lacks any criticality.

As per claims 11, 22, and 33, Peralman teaches using a 3D wavelet transform. (column 4, line 49).

4. Claims 6-9, 17-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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Prior art does not teach or suggest subdividing each of the IBR image data into the plurality of portions further determining at least one displacement vector associated with the at least two IBR image data and subdividing at least one of the IBR image data based on the magnitude of the displacement vector.

5. Claims 28-31 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Shum et al ('710, '596, "Interactive Construction of 3D Models from Panoramic Mosaics" and "Construction and Refinement of Panoramic Mosaics with Global and Local Alignment"), Bishop et al, Peleg et al, Burt et al and Zeng et al are also cited.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yon Couso whose telephone number is (703) 305-4779. The examiner can normally be reached on 8:30 am –5:00 pm from Monday to Friday

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta, can be reached on (703) 308-5246. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3800.

Yjc  
January 9, 2004

  
YON J. COUSO  
PRIMARY EXAMINER